RUST GEOTECH INC.

Spectral Gamma-Ray Borehole
Log Data Report

Log Event A

Borehole 41-01-04

Borehole Information

Farm : SX | **Tank :** SX-101 | **Site Number :** 299-W23-190

N-Coord : 35,527 | **W-Coord :** 75,628 | **TOC Elevation :** 661.65

Water Level, ft : | **Date Drilled :** 11/1/1974

Casing Record

Type : Steel-welded | **Thickness :** 0.280 | **ID, in. :** 6

Top Depth, ft. : 0 | **Bottom Depth, ft. :** 100

Equipment Information

Logging System : 1 | **Detector Type :** HPGe | **Detector Efficiency:** 35.0 %

Calibration Date : 03/1995 | **Calibration Reference :** GJPO-HAN-1

Logging Information

Log Run Number : 1 | **Log Run Date :** 4/20/1995 | **Logging Engineer:** Bob Spatz

Start Depth, ft.: 100.0 | **Counting Time, sec.:** 100 | **L/R :** L | **Shield :** N

Finish Depth, ft. : | **MSA Interval, ft. :** 0.5 | **Log Speed, ft/min.:** n/a

Log Run Number : 2 | **Log Run Date :** 4/21/1995 | **Logging Engineer:** Bob Spatz

Start Depth, ft.: 100.0 | **Counting Time, sec.:** 100 | **L/R :** L | **Shield :** N

Finish Depth, ft. : 48.5 | **MSA Interval, ft. :** 0.5 | **Log Speed, ft/min.:** n/a

Log Run Number : 3 | **Log Run Date :** 4/14/1995 | **Logging Engineer:** Bob Spatz

Start Depth, ft.: 50.0 | **Counting Time, sec.:** 100 | **L/R :** L | **Shield :** N

Finish Depth, ft. : 0.0 | **MSA Interval, ft. :** 0.5 | **Log Speed, ft/min.:** n/a

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Analysis Information

Analyst : P.D. Henwood

Data Processing Reference : Data Analysis Manual Ver. 1 Analysis Date : 7/18/1995

Analysis Notes :

Borehole 41-01-04 was drilled in 1974 to a depth of 100 ft. A .25-in. thick casing was placed to the bottom of the borehole. The casing apparently has never been perforated or grouted, and there is no measurable water in the borehole. Historical gross gamma logging of the borehole has indicated elevated gamma readings at intervals from the surface to about 5 ft and from about 8 to 10.5 ft in depth.

This borehole was logged with the spectral gamma-ray system in three log runs. Data collected from run 1 was not used because there were potential depth problems due to mechanical depth encoder malfunctions. Run 2 was from 100 to 48.5 ft, and run 3 was from 50 to 0 ft with a 1.5 ft overlap from 48.5 to 50 ft. The pre- and post-survey field verification spectra showed consistent peak activities for both runs, but energy calibrations differed due to gain drift in the instrumentation. Spectra were recalibrated for energy versus channel where appropriate.

Cs-137 was the only man-made radionuclide detected in the borehole. It was detected at low concentrations ranging from about 0.2 pCi/g to 19 pCi/g, with the maximum activity near the surface of the borehole. The Cs-137 concentrations correspond with elevated total gamma and gross gamma logs while the naturally occurring radionuclides do not increase in concentration. Cs-137 is indicated at the bottom of the borehole at about 4 pCi/g.

The naturally occurring radionuclides (K-40, U-238, and Th-232) detected in the borehole indicate a possible lithologic change in the subsurface at approximately 60 ft in depth.

Log Plot Notes:

Three log data plots are provided. The Cs-137 concentration is provided in a separate plot to document the concentration and show the shape of the Cs-137 distribution. The error of the Cs-137 concentration determination is shown by the error bars and represents the 95 percent confidence interval. The calculated MDA is shown on this plot as open circles.

A plot of naturally occurring potassium, uranium and thorium (K-40, U-238, and Th-232) is provided to permit correlation of these data with the geologic information. On the Th-232 plot, the MDA value is shown as zero at some depth locations. This zero value was a result of an anomaly in the commercial spectrum analysis software which has been corrected by the vendor. Because the MDA calculation at these few points is not significant relative to the intended use of the plot, the data were not reprocessed and corrected. Therefore, these MDA data points on the plot should be ignored.

A combination plot of individual radionuclide concentrations is provided along with a plot of the total gamma count rate calculated from the spectral data and the WHC Tank Farms gross gamma ray log data obtained from the gross gamma logging systems.